

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/EP2004/008397

International filing date (day/month/year)
27.07.2004

Priority date (day/month/year)
28.07.2003

International Patent Classification (IPC) or both national classification and IPC
C25B11/04, C23C18/02, C01G19/04

Applicant
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1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**International application No.
PCT/EP2004/008397

IAP20 RECEIVED 05 JAN 2006

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material:
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing:
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/EP2004/008397

Box No. II Priority

1. ☒ The following document has not been furnished:

☒ copy of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(a)).

☐ translation of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	2-8, 16, 18, 19-21
	No: Claims	1, 9-14, 15, 17
Inventive step (IS)	Yes: Claims	2-8, 16, 18, 19-21
	No: Claims	1, 9-14, 15, 17
Industrial applicability (IA)	Yes: Claims	1-21
	No: Claims	

2. Citations and explanations

see separate sheet

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

International application No.
IAP20 Rev 1 PCT/PTO 05 JAN 2006
PCT/EP2004/008397

Re Item V.

1. The following documents are referred to in this communication:
 - D1: SU 541 849 A (DOBROKHOTOVA T F) 5 January 1977 (1977-01-05)
 - D2: EP-A-0 479 423 (ICI PLC) 8 April 1992 (1992-04-08)
 - D3: US-A-5 868 913 (HODGSON DAVID RONALD) 9 February 1999 (1999-02-09)
 - D4: US-A-4 941 953 (MATSUMOTO YUKIEI ET AL) 17 July 1990 (1990-07-17)
 - D5: US-A-5 314 534 (GIERSBERG JOACHIM ET AL) 24 May 1994 (1994-05-24)
 - D6: US-A-4 873 352 (KOBASHI TOSHIYUKI ET AL) 10 October 1989 (1989-10-10)
 - D7: EP-A-0 302 738 (JAPAN EXLAN CO LTD) 8 February 1989 (1989-02-08)
2. Document D1 discloses a method for manufacturing of a precursor solution of a tin containing coating comprising the addition of hydrogen peroxide to a stannous chloride solution. It therefore also evidently discloses, at some point, a solution comprising stannic hydroxychloride.
Document D5 also discloses a solution comprising stannic hydroxychloride (see D5, e.g. the claims).
- 2.1 **INDEPENDENT CLAIM 1**
As can be seen from the above, documents D1 or D5 respectively disclose in combination all the features defined in independent claim 1. Hence the subject-matter of this claim is not new (Article 33(2) PCT).
- 2.2 **INDEPENDENT CLAIM 15**
As can be seen from the above, document D1 discloses in combination all the features defined in independent claim 15. Hence the subject-matter of this claim is not new (Article 33(2) PCT).
3. Document D2 discloses an electrode (e.g. anode) provided with an electrocatalytic coating comprising tin in form of mixed oxide.
The applicant should also note: Claims 9-14 of this application are interpreted as product claims 'per se'. Therefore, any document which discloses such a claimed product - even if obtained by a different process or if used for a different purpose - takes away the novelty of the claimed subject-matter.

3.1 INDEPENDENT CLAIM 9

As can be seen from the above, document D2 discloses in combination all the features defined in independent claim 9. Hence the subject-matter of this claim is not new (Article 33(2) PCT).

4. DEPENDENT CLAIMS 10-14, 17

Dependent claims 10-14, 17, 20, 21 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step (Article 33(2) and (3) PCT). Especially the novelty of claims 10-14 and 17 is taken away by the disclosures of D1 or D2 (D2, see the claims).

5. DEPENDENT CLAIMS 2-8, 16, 18

The combination of the features of dependent claims 2-8, 16, 18 are neither known from, nor rendered obvious by, the available prior art. The reasons are as follows:

None of the available prior art documents discloses a non-stoichiometric stannic hydroxychloride compound nor a method for its manufacture.

The closest prior art document in this respect is considered to be D5, that discloses merely a non-stoichiometric stannic hydroxyoxalate but the disclosed stannic hydroxychloride is stoichiometric (the ratio of Sn:Cl should be 1; in D5, see the claims).

With the use of such a non-stoichiometric solution for the manufacture of SnO_2 coatings, coatings with improved stability and electrocatalytic performance are manufactured.

6. INDEPENDENT CLAIM 19

6.1 Documents D2-D4, which are regarded as closest prior art document in respect of claim 19, respectively disclose an electrode (e.g. anode) provided with an electrocatalytic coating comprising tin in form of mixed oxide prepared by pyrolysis.

From this, the subject-matter of independent claim 19 differs in that the solution of claim 1 comprising stannic hydroxychloride is used for manufacturing an electrode.

- 6.2 The subject-matter of claim 19 is therefore novel (Article 33(2) PCT). The problem to be solved by the present invention may be regarded as how to provide an electrode with a more stable coating.
- 6.3 The solution to this problem proposed in claim 19 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons: None of the available prior art documents suggests a method that uses the non-stoichiometric stannic hydroxychloride for making an electrode.
- 6.4 Claims 20, 21 are dependent on claim 19 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

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